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## Supporting in time of need: The Crustacean Collection of Professor Ruiyu Liu from China Seas in the collections of the "Grigore Antipa" Museum

*Ana-Maria PETRESCU, Iorgu PETRESCU*

*"Grigore Antipa" National Museum of Natural History, Kiseleff 1, RO-011341,  
Bucharest, Romania anapetrescu@antipa.ro, iorgup@antipa.ro*

**Abstract.** We present a catalogue of the generous donation made by Professor Ruiyu Liu (J. Y. Liu), esteemed carcinologist, representing 163 crustacean specimens from different groups: Cirripedia, Hoplocarida, Eumalacostraca (Mysidacea), and Decapoda (Penaeidae, Alpheidae, Anomura-Paguroidea, Brachyura) from all the seas around China (Yellow Sea, South China Sea, East China Sea). The specimens were collected between 1929 and 1983 and represent a small part of a larger donation made by the Oceanographic Institute of Academia Sinica and the National Museum in Beijing as an effort to reconstruct the collections lost in the tragic earthquake in Romania in 1977.

**Keywords:** crustacean collection, Brachyura, China seas, Ruiyu Liu, China donation.

## Introduction

The "Grigore Antipa" National Museum of Natural History in Bucharest had to face big unfortunate events during its long history: World War II, bombings, and three earthquakes, namely in 1940, 1977 and 1986 (Petrescu 2004a). On March 4<sup>th</sup>, 1977, Romania was hit by the most terrible earthquake known from the history of modern registrations. A lot of important buildings collapsed, mainly in Bucharest. The "Grigore Antipa" National Museum of Natural History also suffered a lot. Many important pieces were very damaged or even irremediably destroyed, including the most valuable fossil skeletons of *Deinotherium gigantissimum* and *Mastodon americanus*, which had collapsed. After important efforts by the museum's staff, most of the specimens with minor damages were recovered, with some of them being replaced, but still a great loss in the patrimony of the museum remained (Papadopol 1979). In those troubled times, it was late Academician Mihai Băcescu, the famous director of the museum at that time, who had the saving initiative to call for help to the great and extremely generous specialists he knew from all around the world (Petrescu 2004b). Many important donations from different museums of natural history on different continents arrived to Bucharest: from the Australian Museum, a collection of Indo-Pacific molluscs (Petrescu 2004c), from the Smithsonian Institution, U.S.A., and from many others (Andrei 2010). The museum's collections continued increasing thanks to the material Academician Mihai Băcescu had brought from expeditions in the Indian Ocean (Persian Gulf, with the R/V "Thalassa", in 1977), and from Indo-Pacific (expedition of the museum to the Indonesian Archipelago, in 1991).

Prof. Ruiyu Liu (used name J. Y. Liu) (1922-2012) was a renowned marine biologist and carcinologist, a pioneer of carcinology in China and a dedicated professor at the Institute of Oceanology, Chinese Academy of Sciences (I.O.C.A.S.), and later, since 1997, a member of the Chinese Academy (Liu et al. 2020). He focused on numerous groups in the field of marine benthic ecology, on Mysidacea and Cirripedia (Ren & Liu 1978), Stomatopoda and Decapoda (Xiang & Li 2013). One of the magisterial works of his career was the "Checklist of Marine

Biota of China Seas” (Liu 2008), the basis of The Chinese Register of Marine Species (ChaRMS) (Xu et al. 2023).

I.O.C.A.S. conducted a series of surveys starting from 1957 with the R/V *Jinxing* (Venus), named the Comprehensive Oceanographic Survey in the Bohai Sea and northern Yellow Sea (1957-1958), followed by the National Comprehensive Oceanographic Survey (NCOS) to Beibu Gulf (1959-1960, 1962), in which more than 60 different institutes and laboratories from all over China participated. The surveys were carried out in Bohai Gulf (Wade-Giles), Huanghai (Yellow Sea), Tonghai (East China Sea) and Nanhai (South China Sea). Other Sino-Russian Marine Biodiversity Survey (1957-1960) to Hainan Island, and the Sino-Vietnam Joint Comprehensive Oceanographic Survey of Beibu Gulf (Beibuwan Gulf, Gulf of Tonkin) (1959-1962) took place. These were followed by the Xisha (Chen 1975, Chen & Lan 1978, Chen 1980, Huanting 1996) and Nansha expeditions between 1975 and 1986, by the Chinese Academy of Sciences. The marine fishes and invertebrates were deposited in the Marine Biological Museum of the Chinese Academy of Sciences in Qingdao (Liu 2013). Other large-scale ocean and marine living resource surveys include the 1981–1987 National Coastal Zone and Beach Resources Comprehensive Survey, the 1981-1988 Shandong Province Coastal Zone Resources Comprehensive Survey, and the 1991-1999 Sino-Korean Joint Research on Yellow Sea Oceanography.

As an homage to him, an issue of *Crustaceana* Monographs was dedicated to the memory of Prof. Ruiyu Liu, and numerous species and genera had been described in his memory (Liu et al. 2021).

This is the first publication of a catalogue of specimens donated from China to the museum in Bucharest. We hereby present the catalogue of the crustacean collection donated by Professor Ruiyu Liu (J. Y. Liu) to the museum in Bucharest as an utmost help after the tragic loss of part of its collections.

### **Material and methods**

The present catalogue was completed by checking the hard-copy registers and the hand-written registers made by the custodian of the collections (at that

time Mrs. Gabriela Andrei, an esteemed malacologist at the museum) and comparing the data with the original labels accompanying the specimens in the invertebrate collection. All this was done as an effort to complete or correct the available information.

The species were catalogued by their taxonomical classification, according to the present nomenclature. General classification follows the one by Martin & Davis 2001 and Sakai (1976). For barnacles updated classification we have followed Chan et al. 2021.

## **Results and discussions**

On 26 December 1978, the “Grigore Antipa” Natural History Museum received a large donation from the National Museum from Beijing (NMB), containing a collection of mammals, birds, reptiles, molluscs and crustaceans. That donation was the subject of a temporary exhibition specially organized by our museum (Guțu 1978, Marinescu 1979). Our museum received also a second donation from China, from the Oceanographic Institute of Academia Sinica (OIAS), consisting of a collection of crustaceans, molluscs and echinoderms (Marinescu & Ionescu 1985). A final lot of invertebrates was donated by the same Prof. J. Y. Liu in 1983. Several specimens from both donations were part of the permanent exhibition until 1996, when consolidation work has started at the museum building.

In recent decades, an effort was made to catalogue invertebrate specimens, the majority of which are preserved in the wet collections, in 70% ethanol or formalin 4%.

Part of the material was fixed in alcohol. The specimens originating from the National Museum in Beijing (NMB) are as originally placed in cylindrical glass jars with a heavy base and covered by a circular glass plate attached to the rim of the jar with a sealing compound (Fransen et al. 1997), while other pieces are mounted on glass plates in cylindrical jars and fixed with nylon threads. The specimens were exhibited until 2008 in the marine fauna sector (Crustacea) in the permanent exhibition of the museum.

All the specimens have the original label. The specimens from the I.O.C.A.S. hold a significant header with their origin written in Chinese, have a type-written label with the original collection number placed in the left corner, the name of the specimen and data regarding the locality and collecting area written in Latin letters (Fig. 1A). The specimens from the Museum in Beijing present a supplementary label hand-written in India ink, where only the name of the specimen is written in Latin letters (Fig. 1B).

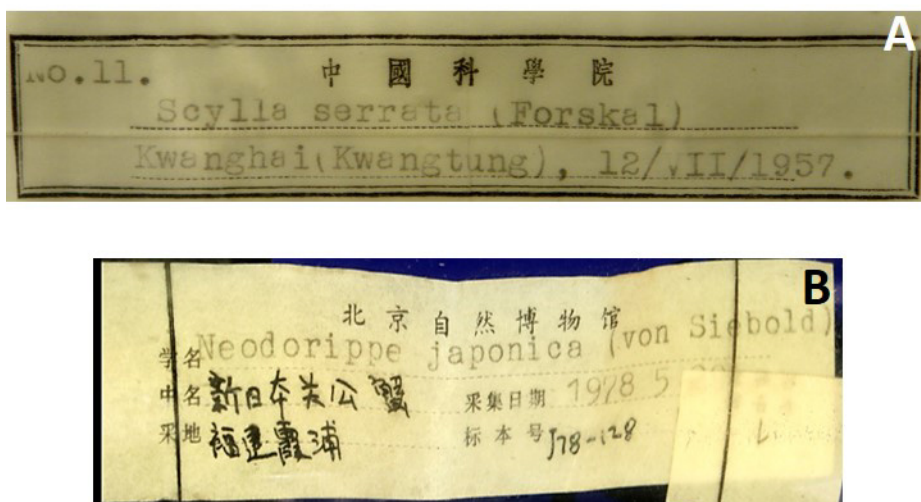


Fig. 1 A. Original type-written label, initial collection number (donation IOCAS).  
1 B. Hand-written label, with initial collection number (don. National Museum from Beijing).

The collection is preserved in the invertebrate wet specimen deposit of the crustacean collection at the “Grigore Antipa” National Museum of Natural History.

The crustacean collection consists of 162 crustacean specimens, preserved in 66 jars. In this collection we could identify 20 specimens from the Beijing Museum and 141 specimens from I.O.C.A.S. Numerous taxa (62 species) are included in major groups such as: Cirripedia, Hoplocarida, Eumalacostraca (Mysidacea), Decapoda (Penaeidae, Alpheidae), Anomura (Paguroidea), and Brachyura (Dorippidae, Calappidae, Matutidae, Leucosiidae, Orithyiidae, Epialtidae, Parthenopidae, Portunidae, Xanthidae, Camptandriidae, Dotillidae,

Macrophthalmidae, Mictyridae, Ocypodidae, Gecarcinidae, Varunidae, Carpiliidae, Dairidae, Eriphiidae, Euryplacidae, and Goneplacidae).

The specimens were collected between 1929 and 1983, but a vast majority of the specimens belong to the period 1950, 1955-1983. According to Liu (2013), prior to 1950 there was no research vessel for marine or fishery science, and only after the foundation of the Marine Biological Laboratory (now the Institute of Oceanology) of the Chinese Academy of Sciences (I.O.C.A.S.) the marine research in China really commenced. Before 1950 the collecting campaigns were realized only with limited resources, namely fishing boats, intertidal surveys, and in fish markets (Liu 2013).

### **Important donors from the Institute of Oceanology of the Chinese Academy of Sciences**

In the collection we were able to identify on the handwritten register and also on the original label that some of the specimens were provided by the most esteemed students of Professor Liu and later on by renowned specialists who collected and donated numerous crustaceans.

**Professor Chen Huilian**, an esteemed Chinese carcinologist, donated ten species of crabs, a collection of remarkable and beautifully preserved specimens, mostly collected from Xisha Islands. She was a student of Prof. J. Y. Liu who had also worked in the Qingdao Institute of Marine Biology, where she had taken part in numerous national surveys between 1958 and 1992 (Ng & Jiang 2013). In 1957, Professor Chen Huilian, who recently graduated at the Xiamen University, was chosen by the Chinese Academy of Sciences to work at the Qingdao Institute of Marine Biology (the predecessor of I.O.C.A.S.), where she studied crustacean systematics under the direct coordination of Professor J. Y. Liu (Ng & Jiang 2013).

Part of the specimens originate from the Xisha and Nansha islands comprehensive expeditions in the 1970s (Chen 1980, Huanting 1996).

Professor Liu's longtime collaborator **Prof. Yongliang Wang** had also donated crustacean specimens, hermit crabs and shrimps from 1957, 1959 and 1982, collected in the Yellow Sea and from the Paracel Islands (Liu & Wang 1978).

**Prof. Qi Zhongyan**, a renowned Chinese malacologist and marine biologist (Zhang et al. 2014), who has also donated an important part of the conchological collection of Chinese molluscs (Andrei G. pers. comm.), provided two species of mysids.

**Abbreviations:** **IOCAS** = The Institute of Oceanology, Chinese Academy of Sciences; **NMB** = National Museum from Beijing; **MGA** = Museum Grigore Antipa; **inv. no.** = inventory number; **specs** = specimens; **ovig.** = ovigerous; **don** = donation.

**Class THECOSTRACA**

**Subclass CIRRIPEDIA**

**Ord. Balanomorpha**

**Superfam. Balanoidea Leach, 1817**

**Fam. Balanidae Leach, 1817**

**Subfam. Amphibalaninae Pitombo, 2004**

*Balanus albicostatus* (Pilsbry, 1916), syn. *Fistulobalanus albicostatus* (Pilsbry, 1916), 30778 (old. col. no. 036), East China Sea, 24.04.1982; 4 specs; don. IOCAS.

**Subfam. Megabalaninae Leach, 1817**

*Megabalanus tintinnabulum* (Linnaeus, 1758), 30777, East China Sea, 15.12.1980; 8 specs; don. IOCAS.

**Superfam. Coronuloidea Leach, 1817**

**Fam. Tetracitidae Gruvel, 1903**

*Tetracitella squamosa* (Bruguère, 1789), 30779 (old. col. no. CRP037), East China Sea, 24.12.1980; 2 specs; don. IOCAS.

**Ord. Pollicipedomorpha****Fam. Pollicipedidae Leach, 1817**

*Pollicipes mitella* (Linnaeus, 1758), syn. *Capitulum mitella* (Linnaeus, 1758), 30793 (old col. no. CRP 039), East China Sea, 24.12.1980; 3 specs.; don. IOCAS.

**Ord. Scalpellomorpha****Superfam. Lepadoidea Chan, Dreyer, Gale, Glenner, Ewers-Saucedo,****Pérez-Losada, Kolbasov, Crandall & Høeg, 2021****Fam. Lepadidae Darwin, 1852**

*Lepas anserifera* Linnaeus, 1758, 30780 (old col. no. CRP 038), East China Sea, 19.05.1980; 2 spec.; don. IOCAS.

**Class Malacostraca Latreille, 1802****Subclass Hoplocarida Calman, 1904****Order Stomatopoda Latreille, 1817****Suborder Unipeltata Latreille, 1825****Superfamily Gonodactyloidea Giesbrecht, 1910****Family Gonodactylidae Giesbrecht, 1910**

*Gonodactylus chiragra* (Fabricius, 1781), 29990, South China Sea, Hainan Island, China, 23.05.1955, 2 specs (1 ♂, 1 ♀); don. IOCAS.

**Superfam. Squilloidea Latreille, 1802****Fam. Squillidae Latreille, 1802**

*Dictyosquilla foveolata* (Wood-Mason, 1895), 29991, South China Sea, Guangdong; 26.03.1956; 2 specs (1 ♂, 1 ♀); don. IOCAS.

*Oratosquilla oratoria* (De Haan, 1844), 29993, East China Sea, Quingdao; 3.04.1957; 2 specs (1 ♂, 1 ♀); don. IOCAS (Fig. 2).

*Oratosquillina interrupta* (Kemp, 1911), 29988, South China Sea, Guangdong; 19.03.1956; 2 specs (1 ♂, 1 ♀); don. IOCAS.

*Quollastria gonypetes* (Kemp, 1911) syn. *Oratosquilla gonypetes* (Kemp, 1911), 29984, South China Sea; 10.1959; 2 specs (1 ♂, 1 ♀); don. NMB.



*Vossquilla kemp* (Schmitt, 1931), 29992, South China Sea, Guangdong;  
19.3.1956; 2 specs (1 ♂, 1 ♀); don. IOCAS.



Fig. 2. *Oratosquilla oratoria* (De Haan, 1844), Japanese squillid mantis shrimp, (♂, ♀)  
(commercial species, MGA inv. no. 29993).

**Subclass Eumalacostraca** Grobben, 1892

**Superord. Peracarida** Calman, 1904

**Order Mysida** Haworth, 1825

**Fam. Mysidae** Haworth, 1825

*Neomysis orientalis* li, 1964, 30773, brought by Prof. Qi Zhong Yan, 09.1983, don.  
Prof. J. Y. Liu, 4 specs, don. IOCAS.

*Hyperacanthomysis longirostris* (li, 1936), syn. *Acanthomysis longirostris*,  
02.1936, 30774, brought by Prof. Qi Zhong Yan, 09.1983, don. Prof. J. Y. Liu, 4  
specs, don. IOCAS.

**Superord. EUCARIDA** Calman, 1904**Order DECAPODA** Latreille, 1802**Suborder Dendrobranchiata** Bate, 1888**Superfam. Penaeoidea** Rafinesque, 1815**Fam. Penaeidae** Rafinesque, 1815

*Penaeus chinensis* (Osbeck, 1765), 29987, East China Sea, Quingdao, J. Y. Liu, China; 20.10.1978; 1 ♂, 1 ♀; don. IOCAS.

*Penaeus japonicus* Bate, 1888, 30782, Yellow Sea, Guandong, China, leg. Chen, 04.1959, 2 specs; don. IOCAS.

**Suborder Pleocyemata** Burkenroad, 1963**Infraorder Caridea** Dana, 1852**Superfamily Alpheoidea** Rafinesque, 1815**Fam. Alpheidae** Rafinesque, 1815

*Alpheus japonicus* Miers, 1879, 30781, China, Quingdao, Y. L. Wang, China, 08.1982, 2 specs; don. IOCAS.

**Infraord. Anomura** MacLeay, 1838**Superfam. Paguroidea** Latreille, 1802**Fam. Paguridae** Latreille, 1802

*Pagurus pectinatus* (Stimpson, 1858), 30775, in sponge, Yellow Sea, leg. J. L. Wang; 11.1957; 2 specs; don. IOCAS.

**Fam. Coenobitidae** Dana, 1851

*Coenobita perlatus* H. Milne-Edwards, 1837, 30776 (without shell); South China Sea, Xisha Island, China, leg. J. L. Wang; 04.1957; 3 specs; don. IOCAS.

**Infraord. BRACHYURA** Latreille, 1802**Heterotremata** Guinot, 1977**Superfam. Dorippoidea** MacLeay, 1838**Fam. Dorippidae** MacLeay, 1838

*Dorippe fachine* (Herbst, 1785), syn. *Dorippoides facchino* (Herbst, 1785), 9383 (orig. no.3), South China Sea, Shanwei (Kwangtung) China, 25.02.1956, 3 specs,

don. IOCAS; 30789, Yellow Sea, Guangdong, China, leg. Chen, 04.1959; 1 spec.; don. IOCAS.

*Dorippe frascone* (Herbst, 1785), 9378, South China Sea, Shanwei (Kwangtung), China; 25.02.1956; 2 specs (1 ♂, 1 ♀); don. IOCAS.

*Neodorippe japonica* (von Siebold, 1824), syn. *Heikeopsis japonica* (von Siebold, 1824), 29881 (orig. no. 1, J78-128), East China Sea, Xiapu, Prov. Fujian, China, 29.05.1978, 2 specs (1 ♂, 1 ♀); don. NMB; 9385, Yellow Sea, Shantung, Tsingtao, 4 specs, don. IOCAS (Fig. 3).

*Dorippe polita* Alcock & Anderson, 1894, syn. *Paradorippe polita* (Alcock & Anderson, 1894), 9372 (orig. no. 4), Bohai Sea, Yellow Sea, Chingwangtao (Qinhuangdao), China, 21.07.1930, 4 specs (2 ♂♂, 2 ♀♀); don. IOCAS.



Fig. 3. *Neodorippe japonica* (von Siebold, 1824), Heikegani, samurai crab (♂, ♀) (MGA inv. no. 29993).

**Superfam. Calappoidea De Haan, 1833****Fam. Calappidae De Haan, 1833**

*Calappa hepatica* (Linnaeus, 1758), 30785, Xisha Island, China, leg. Chen; 05.1975; 1 spec.; don. IOCAS.

*Calappa philargius* (Linnaeus, 1758), 29871 (orig. no. 12, 778-127), East China Sea, Fujian, Chimen, China; 06.1978; 1 spec. 1 ♂; don NMB.; 9388 (orig. no. 5), South China Sea, Shanwei (Kwangtung), 2 specs (1 ♂, 1 ♀), don. IOCAS.

**Fam. Matutidae De Haan, 1835**

*Matuta planipes* Fabricius, 1798, 9364 (orig. no.7), China, East China Sea, Yanghokou (Gulf of Chihli); 17.06.1930; 2 specs (1 ♂, 1 ♀); don IOCAS.

**Superfam. Leucosioidea Samouelle, 1819****Fam. Leucosiidae Samouelle, 1819**

*Pyrhila pisum* (De Haan, 1841), 9363 (orig. no. 8), Bohai Sea, Chinwangtao (Gulf of Chihli), China; 27.07.1930; 3 specs (2 ♂♂, 1 ♀); don. IOCAS.

**Superfam. Orithyoidea Dana, 1852****Fam. Orithyiidae Dana, 1852**

*Orithya sinica* (Linnaeus, 1771), 9391 (orig. no. 6) Yellow Sea, Shantung Peninsula, Hsingsun, 23.05.1931, 2 specs (1 ♂, 1 ♀); don. IOCAS (Fig. 4).



Fig. 4. *Orithia sinica* (Linnaeus, 1771), the tiger face crab (♂, ♀) (MGA inv. no.9391).

**Superfam. Majoidea Samouelle, 1819**

**Fam. Epialtidae MacLeay, 1838**

*Pugettia quadridens* (de Haan, 1839) syn. *Scyra quadridens* (De Haan, 1839), 9367 (orig. no. 9), South China Sea, Yangmatao, (Shantung Pen.); 9.07.1929; 3 specs (1 ♂, 2 ♀♀); don. IOCAS.

**Superfam. Parthenopoidea MacLeay, 1838**

**Fam. Parthenopidae MacLeay, 1838**

**Subfam. Parthenopinae MacLeay, 1838**

*Parthenope (Platylambrus) validus* (de Haan, 1839), syn. *Enoplolambrus validus* (De Haan, 1837), 29877 (orig. no.3; 998-182), East China Sea, Fukuyama, China;

24.04.1978; 1 spec.; don. NMB; 9386 (orig. no. 10), Peihai (Kwangtung) China, 16.06.1957, 1 spec., don. IOCAS.

**Superfam. Portunoidea Rafinesque, 1815**

**Fam. Portunidae Rafinesque, 1815**

**Subfam. Portuninae Rafinesque, 1815**

*Portunus hastatoides* (Fabricius, 1798), syn. *Eodemus hastatoides* (Fabricius, 1798), 29878, East China Sea, Fujian, China, 24.04.1978; 2 specs (1 ♂, 1 ♀ ovig.); don. NMB.

*Portunus sanguinolentus* (Herbst, 1783), 9376 (orig. no. 13), Shantung, Hainan Isl., China; 02.12.1955; 1 spec.; don. IOCAS.

*Portunus trituberculatus* (Miers, 1876), 9379 (orig. no. 12), Cheroo San, Shantung, Hainan Isl., China, 01.05.1930; 2 specs (1 ♂, 1 ♀); don. IOCAS.

**Subfam. Thalamitinae Paulson, 1875**

*Charybdis* (*Gonioneptunus*) *bimaculata* (Miers, 1886), 29879 (orig. no. 5; 778-054), South China Sea, Fujian, Dongshan, Chinese territorial waters; 24.04.1978; 2 specs (1 ♂, 1 ♀); don. NMB.

*Charybdis* (*Charybdis*) *japonica* (A. Milne-Edwards, 1861), 9377 (orig. no. 14), Bohai Sea (Yellow Sea), Shantung, Peitaiho (Gulf of Chihli), China; 21.06.1930, 2 specs (1 ♂, 1 ♀); don. IOCAS.

*Charybdis cruciata* (Herbst, 1794) syn. *Charybdis* (*Charybdis*) *feriata* (Linnaeus, 1758), East China Sea, Shanwei (Guangdong), 17.04.1960, 1 spec. (1 ♀), don. IOCAS.

*Thalamita coeruleipes* Hombron & Jacquinot, 1846, 30783, South China Sea, Xisha Island, China, leg. Chen; 05.1975; 2 specs; don. IOCAS.

**Subfam. Necronectinae Glaessner, 1928**

*Scylla serrata* Forskal, 1775, 9392 (orig. no. 11), Yellow Sea, Kwanghai (Kwangtung), China, 12.02.1957, 2 specs (1 ♂, 1 ♀), don. IOCAS (Fig. 6).



Fig. 6. *Scylla serrata* Forskal, 1775 , Giant mud crab, (♂, ♀) (MGA inv. no. 9392).

**Superfam. Xanthoidea MacLeay, 1838**

**Fam. Xanthidae MacLeay, 1838**

**Subfam. Etisinae Ortmann, 1893**

*Etisus dentatus* (Herbst, 1785), 30792, South China Sea, Xisha Island, China, leg. Chen; 05.1975; 1 spec.; don. IOCAS.

**Subfam. Xanthinae MacLeay, 1838**

*Leptodius sanguineus* (H. Milne Edwards, 1834), 29876 (orig. no. 6; J77-050), Xisha Island, Chinese territorial waters, South China Sea; 21.03.1976; 1 spec.; don. NMB.  
*Xantho distinguendus* (de Haan), syn. *Macromedaeus distinguendus* (De Haan, 1835). 9374 (orig. no. 17), Petaiho - Qinhuangdao, Petaiho (Beidaihe) (Gulf of

Chihli), China; 25.05.1931; 3 specs (2 ♂♂, 1 ♀); don. IOCAS; 29874 (orig. no. 7), Sehngdi, Fujian (Pingyun), Chinese territorial waters, East China Sea, China; 7.05.1978; 2 specs (1 ♂, 1 ♀); don. NMB.

**Subfam. Zosiminae Alcock, 1898**

*Atergatis floridus* (Linnaeus, 1767), 9382, South China Sea, Hainan Island, China, 21.07.1955, 3 specs, don. IOCAS.

*Zosimus aeneas* (Linnaeus, 1758), 30788, South China Sea, Xisha Island, China, leg. Chen; 05.1975, 1 spec.; don. IOCAS.

**Superfam. Ocypodoidea Rafinesque, 1815**

**Fam. Camptandriidae Stimpson, 1858**

*Cleistostoma dilatatum* de Haan, 1835, 9365 (orig. no. 24), Yellow Sea, Tangku (Gulf of Chihli), China; 13.07.1930; 4 specs (2 ♂♂, 2 ♀♀); don. IOCAS.

**Fam. Dotillidae Stimpson, 1858**

*Scopimera bitympa* Shen, 1930, 9381 (orig. no. 21), Yellow Sea, Rushankou, Rushan, Shandong (Shantung), 3 specs; don. IOCAS.

**Fam. Macrophthalmidae Dana, 1851**

*Macrophthalmus (Mareotis) japonicus* (De Haan, 1835), 9373 (orig. no. 23), Bohai Sea, Tengchow (Penglai) (Shantung Pen.), China, 24.05.1930; 3 specs (2 ♂♂, 1 ♀); don. IOCAS; 29872 (orig. no. 10; 999-151), Qingdao, Shangdong, East China Sea, Chinese territorial waters, China, 06.1977; 2 specs (1 ♂, 1 ♀), don. NMB.

**Fam. Mictyridae Dana, 1851**

*Mictyris longicarpus* Latreille, 1806, 9370 (orig. no. 19), South China Sea, Hainan Isl., China, 21.12.1950; 3 specs (1 ♂, 2 ♀♀: 1 ♀ ovig.), don. IOCAS; 29882 (orig. no.9), South China Sea, Fujian, Fuqing, Chinese territorial waters; 14.04.1978; 2 specs (1 ♂, 1 ♀); don. NMB.



**Fam. Ocypodidae Rafinesque, 1815****Subfam. Gelasiminae Miers, 1886**

*Austruca lactea* (De Haan, 1835), syn. *Uca lacteus* (de Haan, 1835), 9369 (orig. no. 22), East China Sea, Wenchow (Wenzhou, Chekiang), 2.07.1962, 3 specs (3 ♂♂); don. IOCAS.

**Subfam. Ocypodinae Rafinesque, 1815**

*Ocypode ceratophthalmus* (Pallas, 1772), 30786, South China Sea, Xisha Island, China, leg. Chen; 05.1975; 1 spec.; don. IOCAS.

*Ocypode stimpsoni* Ortmann, 1897, DCP560, Bohai Sea, Chefoo (Yantai) (Shantung), China; 30.05.1930; 3 specs (2 ♀♀, 1 ♂); don. IOCAS.

*Tubuca arcuata* (De Haan, 1835), 9366 (orig. no.21), Shatsukou (Shantung Pen.), China; 9.05.1931; 3 specs (2 ♂♂, 1 ♀); don. IOCAS.

**Superfam. Grapsoidea MacLeay, 1838****Fam. Gecarcinidae MacLeay, 1838**

*Gecarcoidea lalandii* H. Milne Edwards, 1837, 30790, Xisha Island, China, leg. Y. L. Wang; 04.1957; 1 spec.; don. IOCAS.

**Fam. Varunidae H. Milne Edwards, 1853****Subfam. Gaeticinae Davie & Ng, 2007**

*Gaetice depressus* (de Haan, 1835), 9375 (orig. no. 29), Yellow Sea, Yangmagtao Island, Shantung Peninsula, China, 15.07.1930; 4 specs (2 ♂♂, 2 ♀♀); don. IOCAS; 29875 (orig. no.12; 998-098), Fujian, East China Sea, China; 7.05.1978; 2 specs (1 ♂, 1 ♀ ovig.); don. NMB.

**Subfam. Varuninae H. Milne Edwards, 1853**

*Eriocheir sinensis* H. Milne Edwards, 1853, 9380 (orig. no. 28), Bohai Sea (Yellow Sea), Hopei (Hebei), East China Sea, China; 29.09.1957; 2 specs (1 ♂, 1 ♀); don. IOCAS (Fig. 5).

*Hemigrapsus penicillatus* (de Haan, 1835), 9371 (orig. no. 26), Yellow Sea, Chefoo (Yantai), Shantung, Bohai Gulf, China, 06.05.1930; 4 specs (2 ♂♂, 2 ♀♀: 1 ♀ ovig.); don. IOCAS.

*Hemigrapsus sanguineus* (De Haan, 1835), 9368, Bohai Sea, Chinwangtao (Qinhuangdao, Gulf of Chihli), China; 16.06.1929; 3 specs (2 ♂♂, 1 ♀); don. IOCAS; 29873 (orig. no. 7; 998-93), Dongshan, Fujian, South China Sea, China; 24.05.1978; 2 specs (1 ♂, 1 ♀ ovig.); don. NMB.



Fig. 5. *Eriocheir sinensis* H. Milne Edwards, 1853, Chinese mitten crab, (♂)  
(MGA inv. no.9380).

#### **Subfam. Cyclograpsinae H. Milne Edwards, 1853**

*Helice tridens tientsinensis* Rathbun, 1929, syn. *Helice tientsinensis* Rathbun, 1931, 9387 (orig. no. 30), Yellow Sea, Tangku (Gulf of Chihli), China, 08.05.1929; 2 specs (1 ♂, 1 ♀); don. IOCAS.

#### **Superfam. Carpilioidea Ortmann, 1893**

##### **Fam. Carpiliidae Ortmann, 1893**

*Carpilius convexus* (Forskål, 1775), 30791, South China Sea, Xisha Island, Chen, China, leg. Ren; 05.1975; 2 specs; don. IOCAS.

**Superfam.Dairoidea Serène, 1965**

**Fam. Dairidae Ng & Rodríguez, 1986**

*Daira perlata* (Herbst, 1790), 30784, Xisha Island, China, leg. Chen; 05.1975; 2 specs; don. IOCAS.

**Superfam.Eriphioidea MacLeay, 1838**

**Fam. Eriphiidae MacLeay, 1838**

*Eriphia sebana* (Shaw & Nodder, 1803), 30787, South China Sea, Xisha Island, China, leg. Chen; 05.1975; 1 spec.; don. IOCAS.

**Superfam.Goneplacoidea MacLeay, 1838**

**Fam. Euryplacidae Stimpson, 1871**

*Eucrate crenata* (de Haan, 1835), 9384 (orig. no. 18), South China Sea, Shanwei, Guangdong, China, 29.02.1956, 2 specs (1 ♂, 1 ♀), don. IOCAS.

**Fam. Goneplacidae MacLeay, 1838**

*Carcinoplax longimanus* (De Haan, 1833), 29880 (orig. coll. no. J78-0100), East China Sea, Fujian, Pingyu, China, 14.05.1974, 1 spec.; don. NMB.

**Other invertebrates**

In the invertebrate collection (dried specimens) there were other specimens donated by J.Y.Liu, from I.O.C.A.S. Among the class Asteroidea, fam. Archasteridae, we note the sand star *Archaster typicus* Müller & Troschel, 1840 (2 specs, MGA inv. no. 30750, Hainan Island), or the brittle star *Ophiolepis cincta* Müller & Troschel, 1842 (Ophiuroidea; 2 specs, MGA inv. no.30749, Xisha Island), along with the cake sand dollar *Arachnoides placenta* (Linnaeus, 1758) (Echinoidea, Clypeasteridae; 3 specs, MGA inv. no. 30751), and the rock burrowing urchin *Echinometra mathaei* (Blainville, 1825) (Echinometridae; 1 spec., MGA inv. no. 30752, Hainan Island).

## Conclusions

Professor Ruiyu Liu (J. Y. Liu) donated an entire "Noah's ark" specimens from seas all around China, male and females of each kind, different life stages, different shapes, with peculiar behaviour, important for aquaculture, or species that became invasive, all specimens ready to be exhibited to the public. The rare and beautifully conserved crustacean specimens donated by Prof. J. Y. Liu and his colleagues stand witness to their dedication and great care, a true demonstration of professionalism, friendship beyond the borders, and dedication to education and museology, nonetheless.

Placed at the heart-center of the capital, the "Grigore Antipa" Museum always impressed its visitors, by educating the students, through the museology aspects and even more, through the vivid example of a regenerating organism, all due to the care and dedication of all of its great donors and benefactors, to whom we are forever thankful.

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